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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Masahiko Kubota

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EXAMINER

DAHIMENE, MAHMOUD

ART UNIT

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,658	Applicant(s) KUBOTA ET AL.	
	Examiner MAHMOUD DAHIMENE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 10 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 10 the term “positive type photosensitive material” is not associated with a heating temperature of 120 to 150 degree C, in the specification. The specification disclose “A **positive type resist composite** that contains the above-described copolymer of methacrylic acid and methyl methacrylate as resin elements is employed as a solid layer formation material. The baking temperature is 120 to 150.degree. C.” (page 44). The examiner notes that a **positive type resist composite** is not necessarily a **positive type photosensitive material** since the term resist can be applied to any masking material that prevents etching, the term resist usually refers to etch resistant materials not necessarily photosensitive, and, also, a positive type photosensitive material is not necessarily used resist material, The two expressions are not interchangeable.

3. Claim 11 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 11 the term “the resin composite 1 is dissolved in a solvent mixture of methyl isobutyl ketone and xylene at a density of 60 mass %, and the resultant composite is used for spin coating” (paragraph 0060). The examiner could not find, in applicant’s specification, a paragraph where “xylene **or** methyl isobutyl ketone” is disclosed.

Claim Rejections - 35 USC § 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 1, 2, 3, 7-9, are rejected under 35 U.S.C. 103(a) as being obvious over Kubota et al. (EP 1380422) in view of KAZUHIKO et al. (JP409183928A).

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Kubota et al. (EP 1380422) discloses a method of manufacturing a liquid discharge head comprising the steps of;

forming a solid layer (203) for forming a flow path on a substrate (201) on which an energy generating element (202) is arranged to generate energy that is used to discharge liquid; forming, on the substrate where the solid layer is mounted, a coating layer for coating the solid layer (204);

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forming a discharge port (209) used to discharge a liquid, through a photolithographic process, in the coating layer formed on the solid layer; and

removing the solid layer to form a flow path that communicates with the energy element and the discharge port,

whereby a material used for the coating layer contains a cationically polymerizable chemical compound (paragraph 0042), cationic photopolymerization initiator (paragraph 0043) and

whereby a material of the solid layer that forms a boundary with a portion where the discharge port of the coating layer is formed contains a copolymer of methacrylic acid (abstract) and methacrylate ester (paragraph 0028), which must be present at all boundaries of the resulting material. Applicant's claimed range appears to overlap Kubota et al. (EP 1380422) disclosed ranges (abstract).

Ionizing radiations are used at different wavelengths (paragraph 0018)

Xylene is used (page 8)(paragraph 0049).

It is noted Kubota et al. (EP 1380422) is silent about an inhibitor of cationic photopolymerization in the cationically polymerizable chemical compound.

KAZUHIKO teaches **an ultraviolet-curable resin** composition which can dispense with a resin for a recording medium for coating or recording and has improved application properties by mixing a **cationically polymerizable substance with a cationic photopolymerization initiator** and a leveling agent **a polymerization inhibitor**, etc., are dissolved, mixed and kneaded to obtain **an ultraviolet-curable resin** composition for an ink jet recording system (abstract).

KAZUHIKO teaches cationically polymerizable substance, including cationic photopolymerization initiator and optionally a polymerization inhibitor are conventionally used in curable composition (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kubota et al. (EP 1380422) to include a polymerization inhibitor for the cationically polymerizable substance because KAZUHIKO teaches cationically polymerizable substance, including cationic photopolymerization initiator and optionally a polymerization inhibitor are conventionally used in curable composition (abstract). The reference of KAZUHIKO is only relied on to teach cationically polymerizable substance, including cationic photopolymerization initiator and optionally a polymerization inhibitor are conventionally used in curable composition, and not the composition itself.

One of ordinary skill in the art would have been motivated to add a polymerization inhibitor in order to control polymerization when less or no polymerization is desired, for instance to prolong shelf life.

The reference of KAZUHIKO is not relied on to teach the manufacturing process of the liquid discharge head, but is relied on only to teach cationically polymerizable substance, including cationic photopolymerization initiator and optionally a polymerization inhibitor are conventionally used in curable composition.

Claim Rejections - 35 USC § 103

4. Claims 4-6, are rejected under 35 U.S.C. 103(a) as being obvious over Kubota et al. (EP 1380422) in view of KAZUHIKO et al. (JP409183928A) as applied to claims 1-3 above, and further in view of Goto (US 2003/0215743).

It is noted Kubota et al. (EP 1380422) and KAZUHIKO's abstract are silent about details of the said inhibitor as described in applicant's claims 4-6.

Goto teaches the photosensitive resin composition preferably contains a thermal polymerization inhibitor. Examples of the thermal polymerization inhibitor include aromatic hydroxy compounds such as hydroquinone, p-methoxy phenol, p-t-butyl catechol, 2,6-di-t-butyl-p-cresol, .beta.-naphthol, pyrogallol; quinones such as benzoquinone, p-toluquinone; **amines** such as naphthyl amine, pyridine, p-toluidine, phenothiazine; aluminum salt or ammonium salt of N-nitrosophenyl hydroxyl amine; chloranil, nitrobenzene, 4,4-thiobis(3-methyl-6-t-butylphenol), 2,2-methylenebis (4-methyl-6-t-butylphenol), and 2-mercaptobenzimidazole (paragraph 0139).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kubota et al. (EP 1380422) to include any known polymerization inhibitor cited by Goto.

One of ordinary skill in the art would have been motivated to include a known polymerization inhibitor as described by Goto when the cationic polymerization is thermally activated.

The reference of Goto (US 2003/0215743) is not relied on to teach manufacturing of liquid discharge heads but is relied on to teach photosensitive resin composition preferably contains a thermal polymerization inhibitor.

Claim Rejections - 35 USC § 103

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being obvious over Kubota et al. (EP 1380422) in view of KAZUHIKO et al. (JP409183928A) as applied to claims 1 and 3 above, and further in view of Ikeda et al. (US 5,523,383).

It is noted that the cited prior art is silent about the heating temperature as required in applicant's claim 10.

Ikeda discloses a photocurable resin wherein "The binder polymer serves to shape the resin composition into a film and may mainly be an acrylic polymer which is prepared by the copolymerization of acrylic acid, an acrylate ester, **methacrylic acid**, a **methacrylate ester**, styrene etc. and has a molecular weight of several tens of thousand" are conventionally used as resin (column 1, line 57). Also "After the development, the remaining coating may be post-cured by the irradiation with UV rays or at a temperature of 120.degree. C. or above to thereby improve the resistance of the coating to etching." (column 10, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kubota by heating the photosensitive material at a temperature of 120.degree. C. or above to thereby improve the resistance of the coating because Ikeda suggests such a step.

One of ordinary skill in the art would have been motivated to modify the process of Kubota by heating the photosensitive material at a temperature of 120.degree. C. or above in order to thereby improve the resistance of the coating because Ikeda suggests such a step.

Claim Rejections - 35 USC § 103

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being obvious over Kubota et al. (EP 1380422) in view of KAZUHIKO et al. (JP409183928A) as applied to claims 1 and 3 above, and further in view of a second reference of Kubota et al. (US 2004/0131657).

It is noted that Kubota et al. (EP 1380422) is silent about diglyme.

The second reference of Kubota et al. (US 2004/0131657) teaches diglyme is conventionally used for the same type of material (paragraph 0149).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kubota et al. (EP 1380422) to include the diglyme of Kubota et al. (US 2004/0131657) because Kubota et al. (US 2004/0131657) teaches diglyme is conventionally used for the same type of material.

One of ordinary skill in the art would have been motivated to modify the process of Kubota et al. (EP 1380422) to include the diglyme of Kubota et al. (US 2004/0131657) in order to allow easy application of the material onto the substrate.

Response to Arguments

7. Applicant's arguments filed 1/15/2009 have been fully considered but they are not persuasive.

Regarding applicant's argument about Kazuhiko does not utilize a photolithographic process, this argument is not persuasive because KAZUHIKO teaches **an ultraviolet-curable resin** composition which can dispense with a resin for a recording medium for coating or recording and has improved application properties by mixing a **cationically polymerizable substance with a cationic photopolymerization initiator** and a leveling agent **a polymerization inhibitor**, etc., are dissolved, mixed and kneaded to obtain **an ultraviolet-curable resin** composition for an ink jet recording system (abstract).

an ultraviolet-curable resin is photosensitive. The reference of KAZUHIKO is not relied on to teach the manufacturing process of the liquid discharge head, but is relied on only to teach cationically polymerizable substance, including cationic photopolymerization initiator and optionally a polymerization inhibitor are conventionally used in curable compositions.

In the same manner The reference of Goto (US 2003/0215743) is not relied on to teach manufacturing of liquid discharge heads but is relied on to teach photosensitive resin composition preferably contains a thermal polymerization inhibitor.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHMOUD DAHIMENE whose telephone number is (571)272-2410. The examiner can normally be reached on week days from 8:00 AM. to 5:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. D./
Examiner, Art Unit 1792

/Nadine G Norton/
Supervisory Patent Examiner, Art Unit 1792